

THIRD FIVE-YEAR REVIEW REPORT
CALDWELL TRUCKING COMPANY SUPERFUND SITE
TOWNSHIP OF FAIRFIELD
ESSEX COUNTY, NEW JERSEY



PREPARED BY:
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Region 2
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TABLE OF CONTENTS

List of Abbreviations.....	iv
Executive Summary.....	v
Five-Year Review Summary Form.....	vi
I. Introduction.....	1
II. Site Chronology.....	I
III. Background.....	1
Site Location and Physical Description.....	1
Site Geology and Hydrology.....	2
Land and Resource Use.....	2
History of Contamination.....	2
Initial Response.....	3
Basis for Taking Action.....	3
IV. Remedial Actions.....	4
Remedy Selection.....	4
Remedy Implementation.....	7
Operations, Maintenance and Monitoring.....	9
Institutional Controls Implementation.....	10
V. Progress Since the Last Five-Year Review.....	11
VI. Five-Year Review Process.....	12
Five-Year Review Team.....	12
Community Notification and Involvement.....	12
Document Review.....	13
Data Review.....	13
Site Inspection	14
Interviews.....	14
VII. Technical Assessment	14
Question A.....	14
Question B.....	16
Question C.....	18
Technical Assessment Summary.....	18
VIII. Issues, Recommendations and Follow-up Actions.....	18
IX. Protectiveness Statement.....	19
X. Next Review.....	19

TABLES AND FIGURES

Table 1	Chronology of Site Events.....	20
Table 2	Site Inspection Attendees.....	22
Table 3	Documents, Data, and Information Used in Completing Five-Year Review.....	23
Attachment 1:	Site Figures.....	24

LIST OF ABBREVIATIONS

ACO	Administrative Consent Order
ARARs	Applicable or Relevant and Appropriate Requirements
CEA	Classification Exception Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CIC	Community Involvement Coordinator
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FFS	Focused Feasibility Study
FS	Feasibility Study
MCLs	Maximum Contaminant Levels
Mg/kg	Milligrams per kilogram
MW	Monitoring Well
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollutant Discharge Elimination System
NPL	National Priorities List
NJ GWQS	NJDEP Ground Water Quality Standards
O&M	Operation and Maintenance
OU1	Operable Unit 1
OU2	Operable Unit 2
OSWER	Office of Solid Waste and Emergency Response
PCBs	Polychlorinated Biphenyls
PCOR	Preliminary Closeout Report
ppb	Parts per billion
PRPs	Potentially Responsible Parties
RA	Remedial Action
RAO	Remedial Action Objective
RAR	Remedial Action Report
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act
SVE	Soil Vapor Extraction
SVOCs	Semi-Volatile Organic Compounds
TCA	1,1,1-Trichloroethane
TCE	Trichloroethylene
TSCA	Toxic Substances Control Act
UAO	Unilateral Administrative Order
U.S.C.	United States Code
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

This is the third five-year review for the Caldwell Trucking Company Superfund Site (Site) located in the Township of Fairfield, Essex County, New Jersey. The Site has two operable units. Operable Unit 1 (OU1) focused on soil contamination at the Site as well as public and private potable water well contamination. The Caldwell Trucking Company Superfund Trust (Trust) has completed all work on the OU1 remedy. Operable Unit 2 (OU2) addresses remediation of contaminated groundwater at the Site. Remedial activities are still ongoing for OU2.

The implemented actions (OU1) taken at the Site protect human health and the environment. A Deed Notice was filed with the Township of Fairfield in 2012 and, once approved, will assure long-term protection of the source remedy and prevent improper use of the property. For OU2, a biological treatment system pilot study was conducted from 2001-2002, and amendments to enhance the biodegradation of volatile organic contaminants (VOCs) continue to reduce the concentrations in the Central Lagoon Area. Since 2005, the Trust has been installing monitoring wells and piezometers for hydrologic and contaminant analyses. In December 2008, a groundwater extraction and treatment system began operation through four groundwater extraction wells located on O'Connor Drive in order to contain trichloroethene (TCE) groundwater concentrations of 10,000 micrograms per liter ($\mu\text{g/L}$) or greater.

Contaminated groundwater discharges to a surface seep approximately 3000 feet downgradient of the O'Connor Drive area into an Unnamed Tributary, which then feeds into Deepavaal Brook, a tributary to the Passaic River. Several approaches have been implemented to eliminate, reduce or treat the contaminated groundwater discharge so it does not impact surface water bodies. These included covering the area with crushed stones and soil, installing a permeable reactive barrier, and implementing a groundwater collection system and air stripper. Investigation into additional actions to reduce contamination entering the Unnamed Tributary and Deepavaal Brook is ongoing.

In 2005, the Trust initiated a vapor intrusion study. By August 2010, the Trust has completed initial and follow-up sampling with EPA oversight at 82 residential and commercial properties included in the study area. Currently, there are 17 properties where mitigation systems have been installed and are monitored by the Trust. Sampling of vapor intrusion from commercial/industrial properties and schools in the area is complete. The Trust provides property owners with an EPA-approved letter compiling and explaining the data from their respective residence or business.

The remedy at OU2 is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas by containing highly contaminated groundwater on the property, treatment of the groundwater seep, and implementation of a CEA preventing groundwater consumption within the area of the plume.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Caldwell Trucking Company		
EPA ID: NJD048798953		
Region: 2	State: NJ	City/County: Township of Fairfield, Essex County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? No	
REVIEW STATUS		
Lead agency: EPA If "Other Federal Agency" was selected above, enter Agency name: Click here to enter text.		
Author name (Federal or State Project Manager): Diane Salkie		
Author affiliation: EPA Region 2		
Review period: September 24, 2007 – August 2012		
Date of site inspection: March 08, 2012		
Type of review: Statutory		
Review number: 3		
Triggering action date: September 24, 2007		
Due date (five years after triggering action date): September 24, 2012		

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:

01, 02

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Click here to enter text.	Issue Category: No Issue			
	Issue: Click here to enter text.			
	Recommendation: Click here to enter text.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
Choose an item.	Choose an item.	Choose an item.	Choose an item.	Enter date.

Protectiveness Statement(s)

Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.

<i>Operable Unit:</i> OU 1	<i>Protectiveness Determination:</i> Protective	<i>Addendum Due Date (if applicable):</i> Click here to enter date.
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Protectiveness Statement:

The implemented actions (OU1) taken at the Site protect human health and the environment. A Deed Notice was filed with the Township of Fairfield in 2012 and, once approved, will assure long-term protection of the source remedy and prevent improper use of the property.

<i>Operable Unit:</i> OU 2	<i>Protectiveness Determination:</i> Will be Protective	<i>Addendum Due Date (if applicable):</i> Click here to enter date.
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Protectiveness Statement:

The remedy at OU2 is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas by containing highly contaminated groundwater on the property, treatment of the groundwater seep, and implementation of a CEA preventing groundwater consumption within the area of the plume.

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

Protectiveness Determination:

Will be Protective

Addendum Due Date (if applicable):

[Click here to enter date.](#)

Protectiveness Statement:

The remedies at the Caldwell Trucking Site are expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas by remediating the source area, containing groundwater on the property, and implementing of a CEA preventing groundwater consumption within the area of the plume.

Five-Year Review Report

I. Introduction

This is the third five-year review for the Caldwell Trucking Company Superfund Site (Site), located in Fairfield Township, Essex County, New Jersey. This review was conducted by United States Environmental Protection Agency (EPA) Remedial Project Manager, Diane Salkie. This five-year review was conducted pursuant to Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii), in accordance with the Comprehensive Five-Year Review Guidance, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-03B-P (June 2001) and the updated Five-Year Review Summary Form, OSWER 9200.2-105 (December 2011). The purpose of the five-year review report is to ensure that implemented remedies are protective of human health and the environment and that they function as intended by the decision documents. This document will become part of the Site file.

The Caldwell Trucking Company Site has two operable units. Operable Unit 1 (OU1) focused on soil contamination at the Site, as well as public and private potable water contamination. All work on the OU1 remedy (OU1) has been completed. Operable Unit 2 (OU2) addresses remediation of contaminated groundwater at the Site. Remedial activities are still ongoing for OU2.

In accordance with Section 1.2.1 of the five-year review guidance, a statutory review is triggered for this Site since hazardous substances, pollutants, or contaminants remain on-site as a result of a post-SARA Record of Decision (ROD) Amendment that included in-situ stabilization of the lead-contaminated soils. This soil stabilization remedy was the first remedy to be implemented at the Site that allowed hazardous substances, pollutants, or contaminants to remain on-site after CERCLA was amended. In accordance with Section 1.3.3 of the five-year review guidance, a subsequent statutory review is triggered by the signature date of the previous review. The first review for this Site was signed on September 24, 2002, and the second review was signed on September 24, 2007.

II. Site Chronology

Table 1 summarizes the chronology of site-related events from discovery to the present.

III. Background

Site Location and Physical Description

The Caldwell Trucking Company Site consists of Lot 17 of Block 2201 and Lots 7, 18 and 20 of Block 2302 in the Township of Fairfield, Essex County, New Jersey. The 11.25 acre property is located in the eastern portion of the Township, between O'Connor Drive and Sherwood Lane, immediately east of Passaic Avenue. Approximately 45 small businesses are situated within one mile of the Site and the nearest residential area is approximately 100 feet to the northeast.

Deepavaal Brook and the Passaic River are significant surface water bodies in the vicinity of the Site. Deepavaal Brook flows to the northeast and discharges to the Passaic River. A groundwater seep is located approximately 0.75 mile northeast of the Site and feeds an Unnamed Tributary

that flows in a northerly direction into Deepavaal Brook. The Passaic Valley Water Commission has a water intake located on the Passaic River, approximately 2.2 miles downstream of its confluence with Deepavaal Brook. See Figure 1.

Site Geology and Hydrology

Fairfield Township is located at the extreme northern edge of the Buried Valley Aquifer System recharge zone. The recharge zone of this aquifer system underlies the central basin of the Passaic River in western Essex and southeastern Morris Counties. This aquifer system is designated as a sole-source aquifer, a designation that indicates that it is the sole or principal source of drinking water in the area. However, at present, it is no longer being used as a source of drinking water in the area. Groundwater in the area generally flows in a northerly direction toward the Passaic River.

Three distinct lithologic units have been identified within the unconsolidated deposits underlying the Site. In descending order, the three units are: an upper layer consisting mainly of silty sand (A Zone); a middle layer consisting mainly of silty clay (the Clay Layer); and a basal layer consisting of silt, sand, and gravel with occasional cobbles and boulders (B Zone). Most private and commercial drinking water wells were screened in the A and B Zones.

The uppermost bedrock zone (C Zone) in the area consists of basalt. In areas that have not been subject to glacial erosion, the surface of the basalt is highly fractured due to the geologic cooling process. The fractured, water-bearing bedrock zone is defined as the Upper C Zone. More competent bedrock is exposed in areas where glacial erosion has removed the fractured Upper C Zone. The competent basalt is finely crystalline with few open fractures. This zone, which has been defined as the Lower C Zone, extends down to what has been termed the "hornfels" layer. The hornfels layer, or D Zone, represents an "interflow" sedimentation period between basalt flows. The D Zone was the primary source of drinking water for the municipal water system prior to the Township of Fairfield decision to abandon its municipal well system and instead purchase water from the Passaic Valley Water Commission.

Land and Resource Use

The Site is located in a mixture of light industrial, commercial and residential areas. The 11.25-acre tract was unimproved prior to 1946 when the Caldwell Trucking Company was incorporated. The Site is surrounded by various industries. About 500 single family homes are located within one mile of the Site and West Essex Regional High School is located adjacent to the southeastern boundary of the Site.

History of Contamination

The Caldwell Trucking Company disposed of residential and commercial septic waste, as well as industrial waste, in unlined lagoons on the Site from the early 1950s until about 1973. When the lagoons were full, they were backfilled and a new series of lagoons were excavated, sometimes over pre-existing lagoons. Liquids from the lagoons were transported to the northwestern portion of the property where they were pumped to a large seepage area. In 1973, a request to operate as a sanitary landfill was denied by the New Jersey Department of Environmental Protection (NJDEP) which caused the Caldwell Trucking Company to stop land disposal of the waste and install a series of four underground storage tanks. From 1973 to the early 1980s, wastes were consolidated in the underground storage tanks prior to disposal off-site. By 1984, the Caldwell

Trucking Company stopped using the storage tanks and operated as a transport facility. In 1988, the company ceased the trucking operations and went out of business. See Figure 1.

Disposal in the unlined lagoons resulted in the contamination of on-site soil and groundwater. EPA identified a variety of hazardous substances at the Site in soil, lagoon sludge and groundwater. Heavy metals, especially lead, and a variety of volatile and semi-volatile organic substances were identified in the soils and sludge. Trichloroethylene (TCE), 1,1,1-trichloroethane (TCA), chloroform and other volatile organic compounds (VOCs) were found in the groundwater. The Caldwell Trucking Company's tanks contained lead, VOCs and semi-volatile organic compounds (SVOCs) and some polychlorinated biphenyls (PCBs). Groundwater contamination, consisting primarily of chlorinated VOCs, extends approximately 4000 feet downgradient from the Site to the Passaic River. Contaminated groundwater discharges to a surface seep approximately 3000 feet downgradient of the Site into an Unnamed Tributary which then feeds into Deepavaal Brook, a tributary to the Passaic River.

Initial Response

Around 1970, groundwater contamination became apparent when chlorinated hydrocarbons were discovered in an industrial well near the Site. Private potable wells on Orlando Drive shown to be contaminated with carbon tetrachloride and TCE were closed. In 1980, the New Jersey Department of Environmental Protection began an extensive sampling program of private wells in the Fairfield area. In early 1982, NJDEP notified the Fairfield Township health officer that wells in the area showed extremely high levels of VOCs and recommended that residents in the area be placed on public water between the Site and the Passaic River. Most of the residents with contaminated water connected to the public water supply. In March 1981, NJDEP inspected and sampled the lagoons and noted spillage of solvents on the neighboring General Hose's property. Sludge and soil samples showed significant concentrations of solvents. Monitoring wells installed by the Caldwell Trucking Company on its property indicated substantial groundwater contamination. In December 1982, the Site was proposed for the Federal Superfund National Priorities List (NPL). On September 8, 1983, EPA placed the Site on the NPL by publication in the Federal Register (48 Fed. Reg. 40658).

In 1990, EPA implemented several interim measures to reduce the potential for exposure to Site contaminants. Chain-link gates and fences were installed at critical points to restrict Site access. The exposed lagoon and the four underground storage tanks were covered and surrounded with snow fencing. Portions of the access road were covered with geo-textile fabric and stone to minimize exposure of trespassing dirt bike riders to the lead-contaminated surface soils. EPA also posted warning signs on the fences and at the entrance to the Site.

Basis for Taking Action

The Remedial Investigation/Feasibility Study (RI/FS) associated with the OU1 ROD addressed findings related to the downgradient plume, surface water and sediments and on-site soils. The RI concluded that the major health risk stemming from the Site is associated with ingestion or domestic use of contaminated groundwater. Although no residents or workers in the plume area were at risk, localized pumping influences or dispersion of the contaminant plume may change the risk. Downgradient groundwater was the focus of OU2. It was noted that the groundwater was discharging to the Passaic River but did not impact surface water. In addition, surface water and sediments in the vicinity of the Site were contaminated to varying degrees with contaminants similar to those detected at the Site. However, all but one of these locations are most likely

contaminated from sources other than the Caldwell Trucking Site. The report also indicated that environmental receptors (biota) also may be at risk from contamination in Site soils. Inorganic compounds are the primary contaminant of concern for aquatic biota while PCBs and lead in on and off-site surface soil could potentially affect terrestrial biota.

The RI/FS for OUR2 ROD found that TCE was the primary contaminant in the groundwater. Based on the concentrations found in groundwater and that the affected population would be provided with a public water supply, the risks associated with contaminated groundwater involve the use of it for non-potable purposes. Based on the RI/FS, there also continued to be a potential risk associated with contact to the seep and the tributary of Deepavaal Brook.

IV. Remedial Actions

Remedy Selection

OUI Remedy Selection

In September 1986, EPA signed a ROD selecting a remedy for OUI. Based on the RI, the following three remedial components were addressed for OUI:

- Findings related to Municipal Well Number 7;
- Findings related to the downgradient plume, surface water and sediments; and
- Findings related to or impacting the Site.

Eleven remedial action alternatives were evaluated and the selected remedial action included:

- Restoring a lost potable water resource by providing treatment, through air stripping, of Municipal Water Supply Well No. 7;
- Providing alternate water supply for residents potentially affected by groundwater contamination from the Site and sealing private wells; and,
- Excavating and treating approximately 30,000 cubic yards of contaminated soils and waste via low temperature thermal treatment, and disposing of treated soils in a secure landfill to be constructed at the Site in accordance with Resource Conservation and Recovery Act (RCRA) and Toxic Substances Control Act (TSCA) requirements.

The Township of Fairfield subsequently decided not to use Municipal Well No. 7, relying instead on the Passaic Valley Water Commission as an alternative potable water supply for the entire community. Accordingly, EPA issued an Explanation of Significant Differences (ESD) in May 1991, to delete the provision of well-head treatment for Municipal Well No. 7 as a component of the remedy.

During the remedial design for the contaminated soils and waste materials, studies revealed new information about the levels and combinations of contaminants in the soils and sludge materials at the Site. This information indicated that additional treatment before disposal was necessary to conform to RCRA disposal regulations. In February 1993, EPA issued an ESD to explain modifications to this component of the 1986 OUI ROD, and to identify the increased costs. The modified remedy included off-site treatment and disposal of certain waste materials called "California List Wastes" and stabilization/ solidification of the lead contaminated soils to meet RCRA disposal regulations. The remedy also called for deletion of low temperature thermal

treatment for VOC-contaminated soil from the 1986 OU 1 ROD because disposal of high VOC content California List Waste and solidification/stabilization decreased VOC content to acceptable levels.

In April 1993, EPA issued a unilateral administrative order (UAO) to 11 potentially responsible parties (PRPs) to implement this modified remedy. In February 1994, the PRPs formally requested permission to prepare a focused feasibility study (FFS) to evaluate an alternative remedy for the remaining soil contamination at the Site. The alternate remedy included excavation and off-site disposal of highly contaminated wastes, as described in the existing remedy. In addition, soils with VOC concentrations greater than 100 milligrams per kilogram (mg/kg) would be excavated and disposed of off-site, and the remaining contaminated waste stabilized or solidified in place.

The FFS concluded that a hazardous waste landfill would no longer be necessary because the off-site disposal of highly contaminated wastes, together with on-site stabilization/solidification of the remaining contaminated wastes, would be protective of human health and the environment. In February 1995, EPA signed a Record of Decision Amendment, formally changing the 1986 OU1 ROD remedy to the alternate remedy. The remedial action objectives of the 1995 OU1 ROD Amendment are as follows:

- Prevent exposure through dermal contact with and/or ingestion of California List waste materials.
- Prevent exposure through dermal contact with and/or ingestion of contaminated soil with VOCs greater than 100 mg/kg.
- Prevent exposure through dermal contact with and/or ingestion of contaminated soil containing heavy metals, such as lead, cadmium, and mercury.
- Inhibit leaching of Site contaminants from the soil into the groundwater by stabilizing all contaminated soil with concentrations of lead greater than 1000 mg/kg, and cadmium greater than 3 mg/kg.
- Mitigate any unacceptable risks to human or ecological receptors from the inhalation of contaminants released from soil on the Site to the air.

The remedies selected for the 1995 OU1 ROD Amendment are as follows:

- Excavation and off-site disposal of 1650 cubic yards of California List waste material;
- Excavation and off-site treatment and disposal of all soils with concentrations of VOCs over 100 mg/kg;
- In-situ stabilization of 29,500 cubic yards and 5200 cubic yards of contaminated soil in the central lagoon area and north lagoon area, respectively, to form a low permeability concrete solidified mass; and
- Placement of two feet of clean soil over the solidified mass followed by re-vegetation of the areas to limit contact with the treated materials and erosion of the soil cover.

OU2 Remedy Selection

In September 1989, EPA issued the second ROD for the Site selecting a remedy for OU2. The ROD for OU2 breaks down the Site into four separate phases:

1. Contaminated or threatened private potable wells;
2. Contamination in Municipal Well No. 7;
3. Contamination in the soils at the Site; and
4. Contamination in the groundwater downgradient from the Site.

As of the OU2 ROD, phases one, two and three were already in the design stage. Since then, the private potable wells and Municipal Well No. 7 are no longer in use. Following the 1995 OU1 ROD Amendment, the soils at the Site have been excavated or stabilized. The OU2 ROD addresses the fourth phase, contaminated groundwater downgradient from the Site. The selected remedy for the 1989 OU2 ROD requires:

- The installation of groundwater recovery wells at 15 locations throughout the study area to intercept the entire contaminated groundwater plume, treat through an air stripper and discharge to the Passaic River;
- Due to the length of time required to reach the state's drinking water standard of 1 part per billion (ppb) for TCE, the alternative would be implemented for 30 years to achieve an interim cleanup level which allows for potable use of the groundwater with minimal treatment;
- A contingency remedy if EPA could not obtain access to the properties needed for implementation of the selected containment remedy; and
- The ROD concluded that due to the extent and concentration of the groundwater plume, and the impact of other sources in the Fairfield area, it would take more than 100 years to clean the aquifer to drinking water standards. Accordingly, a waiver was invoked under the OU2 ROD based on technical impracticability.

In 1993, EPA determined that local property owners would not provide the necessary access to implement the selected remedy to install groundwater recovery wells at 15 locations throughout the study area. EPA then issued an ESD explaining its intent to implement the contingency remedy. The contingency remedy selected in the 1989 OU2 ROD includes:

- Groundwater recovery wells at seven locations to intercept contaminated groundwater within the 10,000 ppb TCE contour in the lower water table aquifer (B Zone) and the upper bedrock aquifer (Upper C Zone);
- An air stripper at the Site and effluent pipes discharging to the Passaic River;
- Remediation of the seep and the tributary to the Brook by adjusting the placement and operation of the groundwater pumping and treatment system;
- An enclosed pathway (French drain or culvert) from the Unnamed Tributary to Deepavaal Brook; and
- A long-term monitoring program for surface water sampling.

On June 29, 1993, EPA issued a UAO to 15 PRPs to conduct studies to evaluate the current hydrologic conditions in the contaminated groundwater aquifers and effects the Site may have on the Passaic River. The study was completed in October 1994. In November 1994, EPA, NJDEP and the U.S. Department of Interior signed a consent decree with nine PRPs (Caldwell Trucking PRP Group or "Trust"). The Trust agreed to perform the remedial work necessary to contain the contaminated groundwater plume, in addition to the Site work being done according to the UAOs.

In January 2002, EPA entered into a Consent Decree with the Site owners, the OKON Corporation and the O'Connor family. OKON agreed in this Consent Decree to provide the Trust and EPA access to the Site for all remedial efforts. It also agreed to place a Deed Notice on the property when requested to do so by EPA. The O'Connors have granted and filed an easement to the Trust and EPA along the access road to the property.

Remedy Implementation

OU1 Residential Wells, Site Security, and Soil Remediation

Residential Wells - In the summer of 1989, EPA connected 55 homes and nine commercial establishments, which had been using water from the contaminated groundwater plume, to the municipal water system. Some residents along the eastern edge of the plume (Carlos Drive), the only remaining area within the plume with private wells, refused the connection. In 1999, the Trust offered to connect these homes with private wells to municipal water. One resident agreed and was connected to the municipal system, while five residences along Carlos Drive were not connected to the municipal system. The Trust samples these residential wells as part of its ongoing area-wide groundwater sampling effort.

Site Security - In May 1994, the Trust installed a seven-foot high security fence around the entire Site. The fence is maintained and inspected by the Trust.

Soil Remediation - In September 1994, the Trust excavated approximately 1650 cubic yards (2640 tons) of contaminated soil and waste materials from the central lagoon area (CLA) and disposed of them off-site. Construction of the soil stabilization phase of the remedial action started in August 1995. In October 1995, the Trust suspended the stabilization activities because of high levels of odors and emissions coming from the soils. In November 1995, it proposed to construct a soil vapor extraction (SVE) system to reduce the levels of odors and emissions during stabilization activities. EPA approved this request and, in June 1996, the Trust started the SVE system.

The SVE system operated from June 1996 to March 1997, and removed over 25,000 pounds of VOCs (over 12 tons) from the soil. In March 1997, the Trust restarted stabilization activities and completed the work in September 1997. Approximately 40,000 cubic yards (64,000 tons) of contaminated soils were stabilized. In October 1997, the Site owner informed EPA of a newly identified area (NIA) of contamination near the CLA. Once completed, EPA approved the Remedial Action Completion and Certification Report (BBL, 1999) summarizing the on-site soil stabilization remedy in the Central Lagoon Area, North Lagoon Area, Newly Identified Area and the East Fence Area.

In September 1998, the Trust stabilized an additional 1,000 cubic yards of lead-contaminated soils. In February 2001, the Trust found additional lead-contaminated soils in the north lagoon area (NLA) of the Site. In August 2001, the extent of contamination was delineated and plans were submitted for the cleanup of the contamination. In July 2003, EPA approved the Remedial Action Work Plan Addendum submitted by the Trust to excavate and stabilize the remaining lead-contaminated soils and restore the wetlands in the area. Approximately 2,500 cubic yards of soil were excavated and stabilized from this area. The Trust completed construction in early 2004, and EPA approved completion of the Soils Remedial Action Completion Report in September 2004.

During FY 2005, the Trust's contractor completed a number of wetlands restoration tasks identified after initial wetlands restoration activities were completed. The first Wetlands Monitoring Report was submitted in January 2007. The overall condition of the wetlands one year after the completion of restoration activities was good. Continuation of proper wetlands monitoring and maintenance continued development of wetlands diversity and control of invasive species. The Final Mitigation Project Monitoring Report, dated February 2011, included information on wetlands activities and data obtained during calendar year 2010. The information collected by Arcadis, the wetlands sub-contractor, during visits to the wetlands during 2010 indicated that the wetlands have continued to develop with increased wetlands diversity. A November 09, 2010 letter submitted by NJDEP approved completion of the wetlands mitigation project.

OU2 Groundwater and Groundwater Seep

Groundwater Remediation - In October 2000, the Trust requested permission to pilot test in-situ enhanced biological treatment system in the Central Lagoon Area at the Site. From January 2001 to July 2002, the Trust conducted the pilot test. The study focused on the contaminated groundwater plume and included installing wells to create a test zone into which both nutrients and microorganisms could be injected. Results from the Accelerated In-situ Biological (AISB) treatment pilot test indicated that it appeared to be reducing the levels of VOCs in the groundwater injection sites. The Trust also requested permission from EPA to perform a FFS for the purpose of amending the current groundwater extraction and treatment system remedy. EPA approved the request, however, EPA and NJDEP could not approve the FFS submitted in January 2004 because the document was deficient for a number of reasons. EPA and NJDEP formally notified the Trust that the FFS was not approved and that they should begin implementing the original pump and treat remedy as delineated in the 1989 OU 2 ROD as amended by the 1993 ESD.

The Trust responded with a request to initiate dispute resolution. In November 2004, EPA and the Trust agreed to hold the dispute resolution in abeyance while efforts were made to try and work out a compromise. A compromise was reached and in March 2005, EPA approved the Trust's work plan and the Trust initiated field work for recovery well installation. The work plan called for installation of piezometers and recovery wells and required extensive hydraulic testing including pump tests and the collection of analytical data. The installation of the groundwater extraction wells was completed in June 2007 and results from hydraulic testing of the wells continue to be evaluated by EPA and NJDEP. In March 2008, the Trust submitted the draft remedial design for the pump and treat containment system. EPA conditionally approved the remedial design contingent upon the submission of responses to comments provided in EPA's April 2008 letter. The responses were submitted by the Trust and were approved. The system was designed and constructed to hydraulically contain contaminated groundwater in excess of 10,000 ppb TCE.

The next step involved the construction/installation of the remedy which began in early September 2008 and was completed in December 2008. The groundwater treatment facility, also known as the O'Connor Drive Groundwater Extraction and Treatment System (GETS), has been operating since late December 2008.

Seep Mitigation – In February 1997, EPA modified the groundwater remedial action schedule and allowed the Trust to test the effectiveness of an innovative technology, a permeable reactive barrier (PRB) containing iron with the goal of intercepting and treating the contaminated

groundwater before it discharges at the surface water seep. In May 1998, the Trust completed construction of this system. Monitoring results indicate that the PRB reduces the VOC concentrations in the groundwater but not to acceptable levels at the seep. In February 2002, the Trust completed installation of the “supplemental seep remediation system” to further reduce the levels of contamination reaching the surface water bodies. During the 1986 RI, environmental risks were assessed in the Passaic River, Deepavaal Brook and unnamed tributary. The report indicated that only cadmium, chromium, lead and silver in surface water collected during the investigation had a possible chronic effect on aquatic biota. However, since OU1 remedial actions have been completed, inorganic levels in the surface water have declined to non-detect in the unnamed tributary. The 1989 OU2 ROD indicated that there are no known endangered species or critical habitats located in the plume area.

In early 2006, upgrades began on the system that treats the groundwater emanating from the seep area in order to meet the surface water discharge permit requirements. They were completed in July 2006. A larger air stripper and vapor phase carbon units were installed to provide the added capacity required for the treatment of the contaminated groundwater emanating from the seep and to provide the extra capacity for newly identified contaminated groundwater from an area near the Unnamed Tributary in the vicinity of the existing seep. The Trust submitted a pre-design investigation work plan in June 2007 involving installation of eight piezometers to evaluate the remaining groundwater contamination entering the Unnamed Tributary to Deepavaal Brook from the vicinity of the seep area.

Vapor Intrusion - Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings and is assessed through the collection of sub-slab air and indoor air samples. However, the sampling is dependent upon access granted by the home or business owner. In fall of 2006, the Trust, with EPA approval, began preliminary Vapor Intrusion Study work on approximately ten properties located in an area along Pier Lane where the clay layer is absent, resulting in localized contamination of the surface aquifer (A Zone). The Trust initially began with a Vapor Intrusion study of the ten Pier Lane properties only. However, after EPA held additional discussions with the Trust, the Trust submitted an Amended Expanded Vapor Intrusion Investigation Work Plan which EPA approved in January 2007. The Work Plan included approximately 120 additional properties. In accordance with this expanded Work Plan, the Trust began sampling residential and commercial properties downgradient of the Caldwell Trucking Site in April 2007. By August 2010, the Trust had completed initial and follow-up sampling with EPA oversight at nearly 100 residential properties included in the study area. Currently there are 18 properties where mitigation systems have been installed and are being monitored. Sampling of vapor intrusion from commercial/industrial properties and schools in the area is complete. The Trust provides property owners with an EPA-approved letter compiling and explaining the data from their respective residence or business.

Operations, Maintenance and Monitoring

Soil

The O&M Plan was approved as part of the Report which marked the completion of all soils remediation. O&M activities include inspecting the stabilized soil and soil cover, the integrity of the drainage channels, access road, and erosion control measures, as well as completing wetland restoration and maintenance activities.

Groundwater was monitored for inorganic analytes, including lead in source area wells for a number of years following the OUI remedy completion. Based on low to non-detected levels, inorganic monitoring was discontinued in 2001.

Groundwater

The pump and treat facility, also known as the O'Connor Drive Groundwater Extraction and Treatment System, has been operating since the end of December 2008. An Operations and Maintenance (O&M) Manual for the Groundwater Extraction and Treatment System by the subcontractors, Ground/Water Treatment & Technology Inc. (GWTT), was completed in February 2009. GWTT performs monthly monitoring of the system which includes the amount of groundwater treated per month; recovery well operations; VOC data from combined influent, mid-carbon and individual recovery wells; and well, pump and system maintenance. Every year since 2008, the Trust submits Groundwater Extraction and Treatment System Annual Reports to monitor the effectiveness of the system.

According to the Design Report and the system Operations and Maintenance (O&M) Manual, the treatment system effluent is monitored in accordance with the Two Bridges Sewerage Authority discharge permit.

Groundwater data is obtained from monitoring wells and piezometers wells on an annual basis and the data is summarized in Area-Wide Groundwater Evaluation reports. In February 2012, the Trust completed the most recent area-wide groundwater monitoring event report from 2010 which included 131 water level measurements and sampling of 120 monitoring wells, including the AISB and groundwater extraction system networks. The remaining residential properties on Carlos Drive are sampled as part of this sampling event.

Seeps and Surface Water

The Trust is currently monitoring the performance of the supplemental seep remediation system, including monthly monitoring of the treatment system discharge and downstream surface water. This program includes monthly reporting under a New Jersey Pollutant Discharge Elimination System (NJPDES) Permit equivalent.

In addition, monthly monitoring of the supplemental seep treatment system discharge and downstream surface water is also conducted. This program includes monthly reporting under a NJPDES permit equivalent for the effluent and collecting surface water samples downstream from the Unnamed Tributary and Deepavaal Creek. Currently, the Trust conducts inspections of the Site on a quarterly basis.

The Trust is expected to submit an O&M plan for upkeep of vapor intrusion mitigation systems and monitoring necessities for EPA approval. The wetlands monitoring program was completed in 2010.

Institutional Controls Implementation

A Deed Notice was filed with the Township of Fairfield in 2012 and, once approved, will provide long-term protection of the source remedy and prevent improper use of the property. The fencing of the Site, coupled with these use/deed restrictions, will prevent the Site from being used for intrusive purposes that could create contaminant exposure pathways.

Groundwater in the area is not being used as a drinking water supply. Although not required by the ROD, a Classification Exception Area (CEA) was implemented at the Site in accordance with State regulations. The CEA provides notice that there is groundwater contamination in a localized area caused by a discharge at the Site and covers the entire Site. The CEA covers both on-site groundwater and downgradient groundwater including the seep and all areas between the Site and the Passaic River. The Trust submitted the CEA application and information to NJDEP and EPA in 2003. The NJDEP received the CEA application and included the information in its CEA database. The CEA will continue until groundwater quality standards are achieved.

V. Progress Since the Last Review

The second five-year review was completed in September 2007 and concluded that the implemented actions taken at the Site are protective of human health and the environment in the short-term. Once the Deed Notice is placed on the property, it will be protective in the long-term. In addition, the remedy for OU2 will be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are under control.

Since the second five-year review, the following activities have occurred at the Caldwell Trucking Company Site:

Residential Wells, Site Security, and Soil Remediation

At the time of the 2007 FYR, five residences on Carlos Drive refused connection to the municipal water system. Since that time, two residences have been connected to public water and one residence is vacant. These remaining wells continue to be sampled as part of the ongoing groundwater monitoring activities.

Groundwater and Groundwater Seep

At the time of the 2007 FYR, the trust was piloting bioaugmentation in the central lagoon area. These activities have resulted in decreasing TCE concentrations in this area. Therefore, the Trust continues to add biodegradation amendments to the groundwater to reduce VOC concentrations.

Construction and installation of the pump and treat facility, also known as the O'Connor Drive Groundwater Extraction and Treatment System, was completed and has been operating since the end of December 2008. The extraction wells are monitored on a monthly basis and the effluent discharging to the Fairfield Township Sewerage and Water Department meets permit requirements.

Monitoring data results showed persistent high concentrations of TCE, indicating the possibility of a dense non-aqueous phase liquid (DNAPL) discovered near MW-C33 in the North Lagoon Area (NLA). EPA requested that the Trust delineate the contaminated groundwater. The Trust has completed the installation and sampling of a number of additional monitoring wells in the vicinity of the NLA in an effort to define the extent of this newly discovered area of contamination. In 2010, two shallow bedrock monitoring wells were installed and sampled for lateral delineation and deeper groundwater samples were collected from MW-C55 for vertical delineation. The results indicated that additional work was required to determine the extent of contamination. In October 2011, the Trust installed an additional well cluster, MW-C56, within

the C-zone at three depths: shallow, intermediate and deep. The wells were sampled in late 2011 and EPA is reviewing the results. The Trust is proposing installation of an additional well to further delineate the source.

In 2009, all groundwater samples were collected from the A, B and C zones and analyzed for VOC analysis. In addition, a portion of the wells are sampled for natural attenuation parameters data. Area-wide groundwater monitoring is conducted every one to two years. In the 2009 Area-wide groundwater monitoring report, the Trust proposed an amended O&M plan for 2012 which includes discontinuing laboratory natural attenuation parameters in the A-zone; eliminating sampling of five wells from the B-zone and three wells in the C-zone; eliminating laboratory natural attenuation parameters from four wells in the B-zone and five wells in the C-zone; assessing the wells in the NLA for inclusion in monitoring program; and utilizing passive diffusion bags for the D-zone. EPA is currently reviewing these requests.

Contamination of the Unnamed Tributary discharging into Deepavaal Brook is still being evaluated. Several preliminary studies have shown that contaminated groundwater, located below the clay layer may be bypassing the PRB and discharging to the surface water not far from the seep mitigation system. The Trust has proposed a method for capturing the contaminated groundwater through a trench and French drain system which EPA is currently reviewing.

Vapor Intrusion

In accordance with the expanded 2007 Work Plan for vapor intrusion sampling, the Trust began sampling residential and commercial properties downgradient of the Caldwell Trucking Site in April 2007. By August 2010, the Trust had completed initial and follow-up sampling with EPA oversight at nearly 82 properties included in the study area. Based on these results, the Trust found that 22 properties required mitigation systems, however, only 17 property owners accepted the offer. The Trust continues to monitor the residences with mitigation systems through visual inspection and sampling.

Institutional Control Implementation

A Deed Notice for the Caldwell Trucking property was filed with the Township of Fairfield in 2012 and, once approved, will provide long-term protection of the source remedy and prevent improper use of the property.

VI. Five-Year Review Process

Five-Year Review Team

EPA personnel on the five-year review team include Diane Salkie (RPM), Julie McPherson (Human Health Risk Assessor), Diana Cutt (Hydrogeologist), Mindy Pensak (Ecological Risk Assessor), Pat Hick (Attorney), and Natalie Loney (Community Involvement Coordinator).

Community Notification and Involvement

The EPA Community Involvement Coordinator for the Caldwell Trucking Superfund Site, Natalie Loney, arranged for a notice to be published in a local newspaper called "The Progress" on May 03, 2012. This notice indicated that EPA was conducting its second five-year review of the Caldwell Trucking Superfund Site and vicinity. It also indicated that the five-year review

would be completed by the end of June 2012 and that comments on the remedy or the Site were welcome. The notice also identified the local information repositories. Other notifications included the names, address, and phone numbers for Diane Salkie (RPM) and Natalie Loney (Community Involvement Coordinator). The EPA representatives have not received any inquiries from area residents in response to the published notice.

Document Review

The documents, data, and information which were reviewed in completing the second five-year review are summarized in Table 2.

Data Review

A. Soils Data - Since the stabilized/solidified areas are covered by a soil cover, direct exposure to contaminated materials has been interrupted via this exposure pathway. In addition, a fence surrounds the property which prevents unauthorized access to the Site. The remedial action objective has been met with respect to stabilizing contaminated soil throughout the Site containing concentrations of lead greater than 1000 mg/kg, and cadmium greater than 3 mg/kg. Post-excavation samples and TCLP measures were taken at the completion of the remedial action to ensure the action levels were being met. In addition, groundwater was monitored for inorganic analytes, including lead in source area wells for a number of years following the OU1 remedy completion. Based on low to non-detected levels, inorganic monitoring was discontinued in 2001.

B. Seep Data and Surface Water Data - The Trust is currently monitoring the performance of the supplemental seep remediation system, including monthly monitoring of the treatment system discharge and downstream surface water. This program includes monthly reporting under a New Jersey Pollutant Discharge Elimination System (NJPDES) Permit equivalent. Although the effluent samples continue to meet the NJPEDES permit requirements, seep and downgradient surface water samples from the Unnamed Tributary and Deepavaal Creek continue to show TCE contamination above NJDEP Surface Water Quality Standards. In 2002, the Caldwell Trucking PRP Group sampled the unnamed tributary and Deepavaal Brook and performed a Risk Assessment based on the resulting data. The risk calculations indicate that the excess cancer risk for a child wading in the unnamed tributary is 7×10^{-8} which is below EPA acceptable risk range of 1×10^{-4} to 1×10^{-6} and the Hazard Index for non-carcinogenic effects is 0.04, which is below the threshold of 1. Risks for an adult are lower. For Deepavaal Brook, the Caldwell Trucking PRP Group risk assessment calculations indicate for swimming exposures an excess cancer risk of 1×10^{-9} and a hazard index of 0.004 for a child. Since 2002, the levels of contaminants in the unnamed tributary have decreased, continuing to be below the acceptable risk range. In the interim, in order to continue to meet the discharge requirements, the seep treatment system was upgraded to enhance the system's ability to meet the discharge criteria. The Trust is continuing to research and submit proposals to update the seep treatment system in an effort to reduce contaminants from reaching the Unnamed Tributary and Deepavaal Creek.

C. Groundwater Data - Since the first five-year review, a number of groundwater monitoring events have been completed. In January 2012, the 2010 area-wide groundwater evaluation was submitted by the Trust. This study and other monitoring reports related to biodegradation progress, piezometer and recovery well studies indicate that the concentrations of groundwater contaminants have been decreasing but remain elevated above NJDEP-GWQS. The general trend is for the more highly chlorinated contaminant, TCE, to break down to lower chlorinated

compounds. This decline can be seen in Figures 2 through 9 of Attachment 1. The figures contain a demonstration of data collected from two wells from each of the Site's areas of concern sampled over specified time periods. Refer to Figure 1 for a map of the areas.

In 2008, high concentrations of TCE indicating the possible existence of a DNAPL was discovered near MW-C33 in the North Lagoon Area (NLA). The Trust has completed the installation and sampling of additional monitoring wells in the vicinity of the NLA in an effort to define the extent of this newly discovered area of contamination. In 2010, two shallow bedrock monitoring wells were installed and sampled for lateral delineation and deeper groundwater samples were collected from MW-C55 for vertical delineation. The results indicated that additional work was required to determine the extent of contamination. In October 2011, the Trust installed an additional well cluster, MW-C56, within the C-zone at three depths: shallow, intermediate and deep. The wells were sampled in late 2011 and EPA is reviewing the results, including the proposal for a new well.

D. Vapor Intrusion Air Data - In accordance with the 2007 expanded Work Plan, the Trust began sampling residential and commercial properties downgradient of the Caldwell Trucking Site in April 2007. By August 2010, the Trust completed initial and follow-up sampling with EPA oversight at nearly 100 residential properties included in the study area. Currently, there are 18 properties where mitigation systems have been installed. The Trust submits the properties' indoor air and/or sub-slab air sample results to each resident through an EPA-approved memo. Initial sampling data from the vapor intrusion from investigation is complete.

Site Inspection

EPA personnel made a visit to the Site and vicinity in order to complete a field evaluation for the five-year review on March 08, 2012. Diane Salkie (RPM), Julie McPherson (Human Health Risk Assessor), Diana Cutt (Hydrogeologist), Mindy Pensak (Ecological Risk Assessor) and Pat Hick (Attorney) from EPA met with Chris Young of *de maximis, inc.*, Allen Kane of Golder Associates, Inc., Dennis Young of Ground/Water Treatment & Technology, Inc. and Frances Stella of Brach Eichler. The visit included a tour of the O'Connor Drive Groundwater Extraction and Treatment System from GWTT, a walk-through of the Site property, a visit to the new wells in the NLA on General Hose property, and a tour of the seep area.

Interviews

During the March 08, 2012 Site inspection, Diane Salkie and the EPA team discussed, with the representative from Golder Associates, the Site status including the vapor intrusion summary report, the NLA groundwater sampling results and recommendations, and the seep design. No issues were raised concerning the current Site conditions.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

OU#1 - Municipal Well #7; Downgradient Plume; Soil and Sludge Contamination at the Site –

In the 1986 ROD, the remedy selected for these areas consisted of wellhead treatment of Municipal Well #7 via air stripping; connecting homes to the municipal water supply and decommissioning private wells; excavation and treatment of soils and contaminated wastes via low temperature thermal treatment and disposal of treated soils in an on-site landfill.

Municipal Well #7: Fifty-five residential homes and nine commercial establishments downgradient were connected to the municipal water supply by the summer of 1989. Due to the added expense of adding a carbon filter on the air stripper, the water treatment system for Municipal Well #7 was not installed. The township chose not to use this well as a potable water supply, instead utilizing Passaic Valley Water Commission as an alternative water supply. In May 1991, EPA issued an ESD for Municipal Well #7 and deleted well-head treatment as a component of the remedy. The remedy selected for this component is currently protective since direct exposure to the contaminated groundwater from this exposure point (Municipal Well #7) has been interrupted.

Soil and Sludge Contamination at the Site: The 1986 ROD identified excavation of 28,000 cubic yards (yd³) of contaminated soils and thermal treatment for volatile organic compounds. In addition, the remedy identified disposal of treated soils in an on-site secure landfill in accordance with RCRA and TSCA requirements.

In 1993, an ESD was signed to modify the third component of the remedy selected in the 1986 ROD (excavation, treatment and on-site disposal of contaminated soils and other wastes). Due to the high levels of contaminants observed during the remedial design, an alternative remedy was selected to conform to regulations which included excavation of an additional 7000 yd³ of contaminated soils and waste materials, off-site treatment and disposal of California List waste replacing the thermal treatment of VOCs, placement of treated soils in an on-site RCRA subtitle C/TSCA Landfill, stabilization of the lead-contaminated soils with Portland cement slurry and placement of these stabilized material in the RCRA Landfill. The remedy included treatment that will reduce the VOCs in contaminated soils to acceptable levels by off-site treatment of the California List wastes and treatment of the remaining VOCs in the soils during stabilization process. The disposal criteria for the contaminated waste areas that are classified as California List wastes at the Site were 1000 ppm and 1000 ppm for total halogenated organic compounds (HOCs) and lead, respectively. Approximately 33,000 yd³ of soil containing lead were identified as contamination to be stabilized.

In 1995, a ROD Amendment was signed to modify the remedy that was selected in 1993 ESD. A Focused Feasibility in 1994 determined that stabilizing the soils/waste in place may be as effective in protecting human health and the environment as the existing remedy selected in the 1993 ESD (stabilization and landfill component). The components of the selected remedy in the 1995 ROD Amendment included excavation and off-site disposal of California List wastes (in the Central Lagoon); off-site treatment and disposal of all soils with concentrations of VOCs exceeding 100 mg/kg; in-situ stabilization of residual contaminated soils in the central and northern lagoon areas; and placement of two feet of clean fill over the solidified mass. Since the stabilized/solidified areas are covered by a soil cover, direct exposure to contaminated materials has been interrupted via this exposure pathway. In addition, a fence surrounds the property which prevents unauthorized access to the Site. Finally, groundwater data was collected for inorganic analytes after remedial actions were completed. All monitoring results showed non-detect for inorganic constituents of concern and this monitoring was discontinued.

OU#2 Groundwater - In 1989, the remedy selected to address contamination in the underlying aquifer consisted of the following components: installation of a pump and treatment system; installation of an enclosed drainage system and decommissioning of any wells in the affected plume area. The ROD also identified a contingency alternative to remediate the most contaminated portion of the plume for a shorter period of time if access cannot be obtained from properties needed to implement the initial remedy. This alternative remedy also included

installation of new monitoring wells to ensure that municipal wells were not impacted. The ROD also included a time frame as to when the maximum contaminant levels (MCLs) would be achieved for the contaminants of concern at the Site. Since attaining the MCL concentrations would not be achievable within a reasonable time frame, EPA invoked a technical impracticability waiver.

In 1993, an ESD was issued to modify the selected remedies identified in the 1989 ROD. Access from property owner's downgradient of the Site was not obtained; therefore, the contingency alternative was selected to address the most contaminated portion of the groundwater plume. In addition to addressing the groundwater plume, the contingency remedial alternative was selected since it would be designed to remediate the seep and tributary. Since the ESD was signed in 1993, several interim actions/studies have been conducted at the Site by the PRPs. The pump and treatment system for the Central Lagoon Area was installed and, since December 2008 when operations began, it has extracted and treated 15.5 million gallons of contaminated groundwater. The current pump and treat system does not address contamination emanating from the North Lagoon Area. However, additional investigations are underway by the PRPs to address elevated TCE levels in this area. The Trust continues to add biodegradation amendments to the groundwater to reduce VOC concentrations. In the interim, groundwater monitoring data demonstrates that the VOC contamination in the groundwater has declined since the treatment system began operation. Residential wells in the vicinity of the plume that are not connected to municipal water supply continue to be monitored. To date, sampling results show no impact to these wells. The Trust is currently operating a treatment system to address groundwater seeps. A proposal to upgrade this system is currently being reviewed by EPA. Surface water indicates that groundwater is still discharging to the unnamed tributary but levels are below levels that would impact biota. As stated earlier, the RI risk assessment indicated there is no risk to human health or the environment at the current levels being discharged to surface water.

Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy still valid?

Some chemical-specific toxicity values and exposure assumptions have changed since the Site was originally assessed. In order to account for changes in toxicity values and exposure assumptions since the remedial investigation was initiated on the Site, the concentrations of the contaminants of potential concern (COPCs) identified during the 2007-2010 sampling events were compared to their respective Region 9 Preliminary Remediation Goals (Region 9 PRGs), New Jersey Department of Environmental Protection Groundwater Quality Standards (NJDEPGWQS), and their respective National Primary Drinking Water Standard Maximum Contaminant Levels (MCLs). The MCL is the highest level of contaminant that is allowed in drinking water. MCLs are promulgated standards that apply to public water systems and are intended to protect human health by limiting the levels of contaminants in drinking water. Region 9 PRGs are a human health risk-based value that is equivalent to a cancer risk of 1×10^{-6} or a hazard index of 1. A review of the groundwater data (2007-2010) indicates that concentrations of the site-related contaminants of concern continue to exceed their respective Region 9 PRGs, NJDEP GWQS and MCLs. However, these ARARs were waived through a Technical Impracticability waiver in the 1989 ROD. The CEA that is established effectively prevents installation of new monitoring wells within the footprint of this plume.

The soil remedy was reviewed to address the protectiveness of the remedy presented in the OU#1 ROD Amendment. The exposure to contamination via direct contact in the remediated area has been interrupted since the area has a two-foot layer of soil on top of the

solidified/stabilized material. The cleanup goals established for lead and cadmium in the soil are still valid.

As stated earlier, interim actions (iron reactive barrier and air stripper) have been implemented to attempt to prevent site-related contaminants from impacting the Unnamed Tributary, Deepavaal Brook and the Passaic River. The NJDEP has provided the Site with a NJPDES Permit for the discharge of treated groundwater to the Unnamed Tributary. The effluent has been sampled on a monthly basis since 2001 and has been in compliance with the NJPDES Limitations for almost all sampling events since 2001. The concentrations of constituents in the seep and the Unnamed Tributary (May 2007) have been reviewed to determine if the Unnamed Tributary continues to be impacted by site-related contaminants. The concentrations of site-related constituents were compared to their respective Region 9 PRGs, MCLs and NJDEP-GWQS since the surface water area is considered a potable water supply (FW2-NT). The results of this sampling event indicate that site-related contaminants exceed their respective Region 9 PRGs, NJDEP-GWQS and MCLs and continue to impact the Unnamed Tributary and Deepavaal Brook. As indicated previously, several preliminary studies completed by the Trust have shown that contaminated groundwater, located below the clay layer not far from the seep mitigation system, is most likely responsible for the VOCs found in the Unnamed Tributary. The source and location of the groundwater contamination to the Unnamed Tributary discharging into Deepavaal Brook has been evaluated by the Trust. The Trust is investigating an appropriate method for eliminating the contamination from entering the water bodies.

In 2002, the Caldwell Trucking PRP Group sampled the unnamed tributary and Deepavaal Brook and performed a Risk Assessment based on the resulting data. The risk calculations indicate that the excess cancer risk for a child wading in the unnamed tributary is 7×10^{-8} which is below EPA acceptable risk range of 1×10^{-4} to 1×10^{-6} and the Hazard Index for non-carcinogenic effects is 0.04, which is below the threshold of 1. Risks for an adult are lower. For Deepavaal Brook, the Caldwell Trucking PRP Group risk assessment calculations indicate for swimming exposures an excess cancer risk of 1×10^{-9} and a hazard index of 0.004 for a child.

For the Passaic River, EPA used modeled concentrations in its 1989 risk assessment. In its risk assessment, the Caldwell Trucking PRP Group used actual 1993 and 1994 data measured in the Passaic River just downstream of the confluence with the Deepavaal Brook. The Caldwell Trucking PRP Group's calculated risk for potable water indicates a hazard index of 0.2 and an excess cancer risk of 1×10^{-6} , both within EPA's acceptable risk range. The PRP risk calculations indicate that the actions taken by the Caldwell Trucking PRP Group are currently protective for surface water. Since the contaminant levels have decreased since 2002, EPA believes that these actions continue to be protective for surface water. During the 1986 RI, environmental risks were assessed in the Passaic River, Deepavaal Brook and unnamed tributary. The report indicated that only cadmium, chromium, lead and silver in surface water collected during the investigation had a possible chronic effect on aquatic biota. However, since OUI remedial actions have been completed, inorganic levels in the surface water have declined to non-detect in the unnamed tributary.

Since April 2007, the Trust is conducting an Expanded Vapor Intrusion Investigation to address the potential for related contaminants volatilizing and accumulating in homes located above the plume downgradient of the Caldwell Trucking Company Site. The Trust has nearly completed the sampling of the properties whose owners signed access agreements allowing the Trust to take samples. The Trust has installed 18 mitigation systems since the start of preliminary work in Fall of 2006 and continues to monitor the systems.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Dense non-aqueous phase liquid (DNAPL) has been observed in the North Lagoon plume area. The nature and extent of the DNAPL and the associated groundwater contamination is under investigation. However, as previously indicated, once completed, the groundwater remedy is expected to reduce and contain the highly contaminated area of groundwater; eliminate the risks posed by the seep; and minimize the levels of contamination reaching the Passaic River.

Technical Assessment Summary

According to the data reviewed, the Site inspection, and the interviews, the OU1 remedy is functioning as intended by the decision documents. The OU1 remedy stabilized the Site contaminants and addressed the potential risks associated with waste materials at the Site. There have been no changes in the physical condition of the Site that would affect the protectiveness of the OU1 remedy. The OU2 seep mitigation system designed to address potential risks associated with discharge of contaminated groundwater to surface water is currently under study. There are no changes in the toxicity factors for the contaminants of concern used in the baseline risk assessment that affect the protectiveness of the remedy, and there have been no changes to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy. For OU2, a biological treatment system pilot study was conducted from 2001-2002, and amendments to enhance biodegradation of volatile organic contaminants continue to reduce the concentrations. Construction and installation of the groundwater pump and treat facility was completed and has been operating since the end of December 2008. The extraction wells are monitored on a monthly basis and the effluent discharges to the Fairfield Township Sewerage and Water Department. The VOC contamination in the groundwater has declined since the treatment system began operation. The Trust continues to add biodegradation amendments to the groundwater to reduce VOC concentrations. The newly discovered area of DNAPL levels of contamination near the NLA is currently undergoing additional evaluation and delineation.

As a result of OU2 interim measures taken by EPA, NJDEP, and the Trust, site-impacted groundwater, surface water, and sediments are protective of human health and the environment in the short-term. While groundwater in the area is not being used as a public water supply, the placement of the area downgradient of the Site in the State's Classification Exception Area (CEA) database in 2003 provides additional protection of human health and the environment. The CEA encompasses the entire Site as well as the downgradient seep area. The remedy for OU2 will be protective of human health and the environment upon completion of OU2.

VIII. Issues, Recommendations and Follow-up Actions

This report does not identify or recommend any action at this Site needed to protect human health and/or the environment that is not addressed by the remedies selected in the Site decision documents. However, since the Site is not construction complete, there are many ongoing activities at the Site:

Further studies are underway for further optimization of the groundwater seep mitigation system to eliminate contamination from entering the Unnamed Tributary and Deepavaal Creek.

The Trust continues to sample the remaining two Carlos Drive residences not connected to the municipal water system.

The Trust has conducted a number of studies related to the contaminated groundwater containment system and have installed four recovery wells. Construction and installation of the pump and treat facility was completed and has been operating since the end of December 2008. The extraction wells are monitored on a monthly basis and the effluent discharges to the Fairfield Township Sewerage and Water Department. The VOC contamination in the groundwater has declined since the treatment system began operation. The Trust continues to add biodegradation amendments to the groundwater to reduce VOC concentrations. Additional delineation and evaluation of the newly discovered DNAPL contamination in groundwater near the NLA is ongoing.

The Trust is concluding the process of conducting a Vapor Intrusion Study that includes 82 properties downgradient of the Caldwell Trucking Company Site. The indoor air and/or sub-slab air of the residents and businesses have investigated and received a mitigations system as necessary. The Trust continues to monitor the systems as necessary and is compiling the data. An operation and maintenance plan for the future of monitoring for vapor intrusion will be developed.

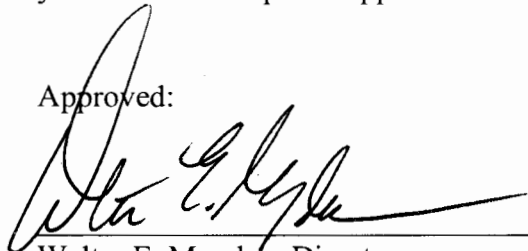
IX. Protectiveness Statement

The implemented actions (OU1) taken at the Site protect human health and the environment. A Deed Notice was filed with the Township of Fairfield in 2012 and, once approved, will assure long-term protection of the source remedy and prevent improper use of the property. The remedy at OU2 is expected to be protective of human health and the environment upon completion. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risks in these areas by containing highly contaminated groundwater on the property, treatment of groundwater seep, and implementation of a CEA preventing groundwater consumption within the area of the plume.

X. Next Review

Since hazardous substances, pollutants, or contaminants will remain at the Caldwell Trucking Company Site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430(f)(4)(ii), the remedial action for the Site shall be reviewed no less than every five years. EPA will conduct another five-year review on or before August 2017, which is five years from this report's approval date.

Approved:



Walter E. Mugdan, Director
Emergency and Remedial Response Division

8/22/2012
Date

Table 1 – Chronology of Site Events	
Event	Date
George and Rose O'Connor start Caldwell Trucking Company	1946
Waste disposal into unlined lagoons	Early 1950s until 1973
Groundwater contamination identified	1970
Underground storage tanks used for waste handling prior to off-site disposal	1974 to the early 1980s
NJDEP begins extensive sampling in the area	1980
NJDEP recommends that all residents between the Site and the Passaic River be placed on public water	March 1982
Site placed on NPL	September 1983
Initial RI/FS Completed	June 1986
Initial Record of Decision for Site soils and alternate water supplies (OU1)	September 1986
Caldwell Trucking Company ceases operations	1988
EPA connects 55 homes and 9 commercial establishments to municipal water system.	Summer 1989
OU2 RI/FS Completed	July 1989
Record of Decision for OU2	September 1989
Interim Remedial Measures including Site clearing, fencing, covering lagoons, and placing gravel on access roads	1990
ESD issued to address decision not to restore Municipal Water Supply Well Number 7	May 1991
ESD issued to address decision to stabilize contaminated soils	February 1993
ESD issued to address decision to implement groundwater contingency remedy	July 1993
PRPs installation of perimeter fence	May 1994
PRPs complete excavation and off-site disposal of PCB and VOC-contaminated soils	September 1994
EPA, NJDEP, US Dept. of Interior sign RD/RA Consent Decree with PRP Group	November 1994
OU1 ROD amended to select in-situ stabilization of lead-contaminated soils	February 1995
PRPs start soil stabilization PRPs operate Soil Vapor Extraction System	August 1995 June 1996 – March 1997
EPA allows the PRPs to construct and test iron reactive wall at the seep	February 1997
Start of OU2 on-site construction activities	September 1997
Iron reactive wall constructed	May 1998
PRPs complete soil stabilization activities	September 1998
EPA approval of PRP Group pilot test for accelerated biological treatment and construction of a supplemental seep treatment system	December 2000
PRPs identify additional lead contaminated soils	February 2001
Supplemental seep treatment system constructed	February 2002
PRP Group completes accelerated biological treatment pilot test	July 2002
First five-year review completed	September 2002
EPA approves PRPs' request to develop GW bioremediation FFS	May 2003
EPA approves RA Work Plan Addendum for excavation/stabilization of remaining soils in ENLA	July 2003
EPA disapproves GW bioremediation FFS	January 2004

Table 1 – Chronology of Site Events - Continued	
EPA approves Soils Remedial Action Completion Report	September 2004
PRPs conduct several surface water and ground-water studies to assess and locate the source of contamination of the Unnamed Tributary to Deepavaal Brook	2004 - 2012
EPA and Trust agree to hold dispute resolution in abeyance while efforts are made to work out a compromise	November 2004
EPA approves Work Plan to implement first phases of GW remedy	March 2005
PRPs begin preparing work plans for a Vapor Intrusion Study	Late 2005
PRPs discover new “hot spot” of groundwater TCE contamination in NLA	October 2005
PRPs begin operation of upgraded Seep Treatment System	July 2006
PRPs submit an expanded Vapor Intrusion study Work Plan	October 2006
PRPs submit first Wetlands Monitoring Report	January 2007
EPA approves PRPs’ modified expanded Vapor Intrusion Work Plan	January 2007
EPA holds public meeting for VI study	March 2007
PRPs conduct indoor air and sub-slab sampling according Expanded VI Work Plan	April 2007 – 2012
PRPs complete work on installation of remediation wells along O’Connor Drive	June 2007
Second five-year review completed	September 2007
PRPs, EPA and NJDEP meet to discuss groundwater delineation of NLA	January 2008
PRPs submit Design Report Groundwater Extraction and Treatment System	March 2008
EPA approves Work Plan for Pre-Design Investigation of the Seep Area	April 2008
PRPs install vapor intrusion mitigation systems in 18 residences and businesses	October 2006; April 2008 – December 2009
EPA and DEP review and approve Groundwater Extraction and Treatment Design Report	May 2008
PRPs select Groundwater Treatment & Technology Inc as remedial action contractor	June 2008
Construction began in July 2008 and concluded November 2008; a Construction Completion Report was submitted in March 2009	July 2008 – March 2009
PRPs and contractors began operation of O’Connor Drive Groundwater Extraction and Treatment System	December 2008
PRPs submit Groundwater Extraction and Treatment System Final Startup Report	May 2009
PRPs submit Focused Pre-Design Investigation Tributary/Seep Area	January 2010
EPA approves work plan for installation of monitoring wells C-53 and C-54 for groundwater delineation in NLA	February 2010
EPA approves work plan for installing monitoring well C-55 in NLA	September 2010
EPA approves work plan for installing monitoring well C-56 in NLA	June 2011
EPA approves Groundwater Extraction and Treatment System Annual Report 2009	February 2012
Third five-year review completed	August 2012

Table 2: Site Inspection Attendees			
Name	Telephone	Organization	Capacity
Diane Salkie	212-637-4370	EPA	Project Manager (RPM)
Diana Cutt	212-637-4311	EPA	Geologist
Mindy Pensak	732-321-6705	EPA	Ecological Risk Assessor
Julie McPherson	212-637-4159	EPA	Human Health Risk Assessor
Patricia Hick	212-637-3137	EPA	Attorney
Allen Kane	610-941-8173	Golder Associates	Trust - Consultant
Frances Stella	973-403-3149	Brach Eichler	Trustee
Chris Young	610-435-1151	De maximis	Project Coordinator
Dennis Young	973-983-0901	GWTT	Treatment Plant Operator

Table 3: Documents, Data, and Information Used in Completing Five-Year Review
Remedial Investigation Report, NUS Corp. 1986
Feasibility Study, NUS Corp., 1986
Caldwell Trucking OU1 Record of Decision, EPA, September 1986
Remedial Investigation Report for Off-Site Area, Ebasco, 1989
Feasibility Study, Ebasco, 1989
Caldwell Trucking OU2 Record of Decision, EPA, September 1989
Explanation of Significant Differences, EPA, May 1991
Explanation of Significant Differences, EPA, February 1993
Explanation of Significant Differences, EPA, September 1993
Unilateral Administrative Order, EPA, April 1993
Unilateral Administrative Order, EPA, July 1993
Consent Decree, EPA, NJDEP, Dept. of Interior and Caldwell Trucking PRP Group, November 1994
Off-Site Groundwater Remediation Pre-Design Investigation Report, Eckenfelder, January 1995
Focused Feasibility Study, Blasland, Bouck & Lee, Inc., October 1994
Record of Decision Amendment, EPA, February 1995
Remedial Action Completion and Certification Report for Operable Unit No. 1, Caldwell Trucking PRP Group, April 1999
Source Area New Monitoring Wells, Field Investigation and Sampling Data and Updated Site Conceptual Model, Golder Sierra, May 2000
Report on Final Design for Supplemental Seep Treatment System Above-Ground Iron Reactor and Air Stripper, Golder Sierra, May 2001
Area-Wide Groundwater Evaluation, Golder Associates, March 2002
Caldwell Trucking PRP Group Five-Year Evaluation, Caldwell Trucking PPR Group, August 2002
Focused Feasibility Study, January 2004
Source Area Groundwater Remediation, Interim Report, July 2005
2005 Area-wide Groundwater Evaluation, February 2006
Revised Vapor Intrusion Work Plan, April 2006
Expanded Vapor Intrusion Work Plan, October 2006
Amended Expanded Vapor Intrusion Work Plan, February 2007
Revised Draft Technical Memorandum Hydraulic Testing of Remediation Wells, August 2007
Design Report Groundwater Extraction and Treatment System, March 2008
Construction Completion Report, March 2009
2008 Area-wide Groundwater Evaluation, November 2009
Groundwater Extraction and Treatment System Final Startup Report, March 2010
Groundwater Extraction and Treatment System Annual Report 2009, October 2010
2009 Area-wide Groundwater Evaluation, March 2011
Groundwater Extraction and Treatment System Annual Report 2010, January 2012
2010 Area-wide Groundwater Evaluation, January 2012

ATTACHMENT 1

SITE FIGURES

ATTACHMENT 1
PLUME CORE WELL DATA AND FIGURES

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
3/1/1988	430	ND	120	64	6	64000		610	ND	200		5700	ND	71130
5/1/1988	2100	ND	140	69	ND	40000		630	ND	170		5000	ND	48109
6/1/1988	1400	ND	200	170	ND	40000		ND	200	290		7000	14	49274
3/1/1994	3700	ND	ND	240	ND	4900		6200	ND	790		13000	ND	28830
10/1/1996	5200	13	820	570	ND	2500		16000	ND	1500		17000	50	43653
11/1/1996	3200	ND	540	380	ND	1600		11000	ND	1200		11000	ND	28920
11/5/1998	2700	ND	380	290	ND	930	ND	10000	ND	1200	ND	10000	ND	25500
9/17/2003	1400	ND	490	310	ND	290	ND	9600	ND	770	ND	4500	170	17530
6/9/2005	710	ND	85	160	ND	32	ND	4200	ND	120	ND	460	30	5797
12/20/2006	1100	ND	490	ND	ND	68	ND	6500	ND	220	ND	920	320	9618
10/17/2008	500	ND	440	120	ND	48	ND	3300	ND	230	10	840	640	6128
12/2/2009	200	ND	130	43	ND	12	ND	1400	ND	84	4.3	330	180	2383.3
12/15/2010	170	ND	59	24	ND	13	ND	630	ND	44	1.7	180	63	1184.7

Values in bold have a "J" qualifier
ND = Not Detected

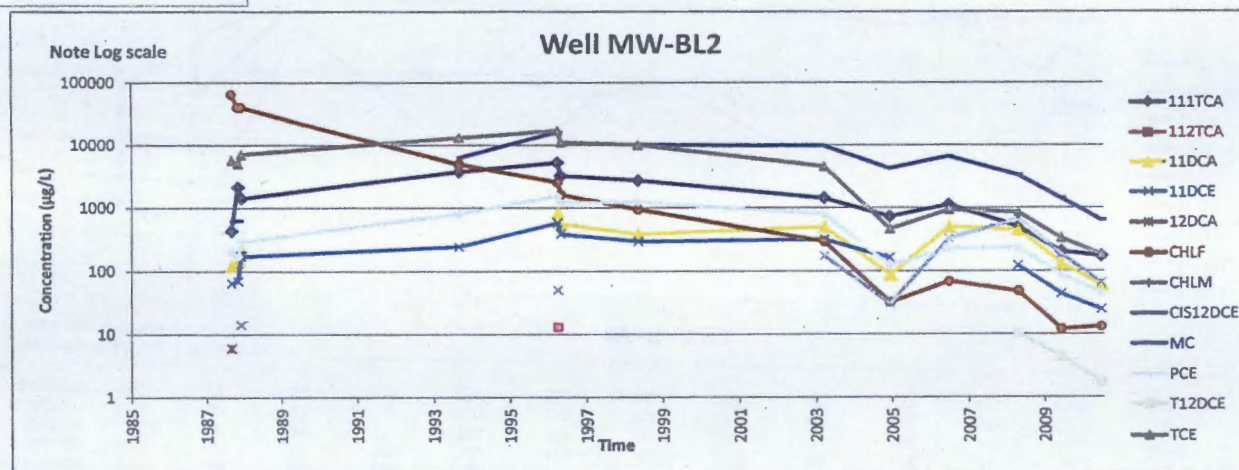


Figure 2

Figure C1-1
Concentration (mass) vs. Time

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
7/1/1985	3800	ND	ND	ND	ND	2000		ND	ND	1000		19000	ND	25600
9/1/1985	6800	ND	760	800	ND	2800		ND	280	1900		18000	ND	29340
6/8/1988	250	ND	60	28	ND	120		ND	ND	120		2000	ND	2578
3/30/1994	750	ND	ND	280	ND	790		22	19	890		13000	ND	15751
10/1/1996	340	ND	15	150	ND	350		18	ND	460		6400	ND	7731
11/1/1998	280	ND	ND	94	ND	300	ND	ND	ND	430		5300	ND	6404
12/17/2001	690	ND	ND	ND	ND	330	ND	210	ND	810	ND	9200	ND	11240
9/17/2003	630	ND	34	210	ND	360	ND	150	12	1100	ND	10000	ND	12496
6/7/2005	1100	ND	ND	ND	ND	370	ND	1200	ND	1400	ND	15000	ND	19070
12/13/2006	630	ND	ND	ND	ND	370		340	ND	1200	ND	10000	ND	12540
10/22/2008	480	ND	ND	360	ND	370	ND	3400	ND	1200	ND	7700	ND	13510
6/22/2009	520	ND	45	190	ND	410	ND	3900	ND	890	16	7400	ND	13371
11/19/2009	470	ND	35	230	ND	300	ND	2200	11	890	ND	6100	ND	
6/15/2010	500	ND	31	210	ND	310	ND	2700	ND	850	ND	6300	3.8	
12/6/2010	500	ND	34	220	ND	320	ND	2800	ND	740	ND	6500	ND	

Values in bold have a "J" qualifier
ND = Not Detected

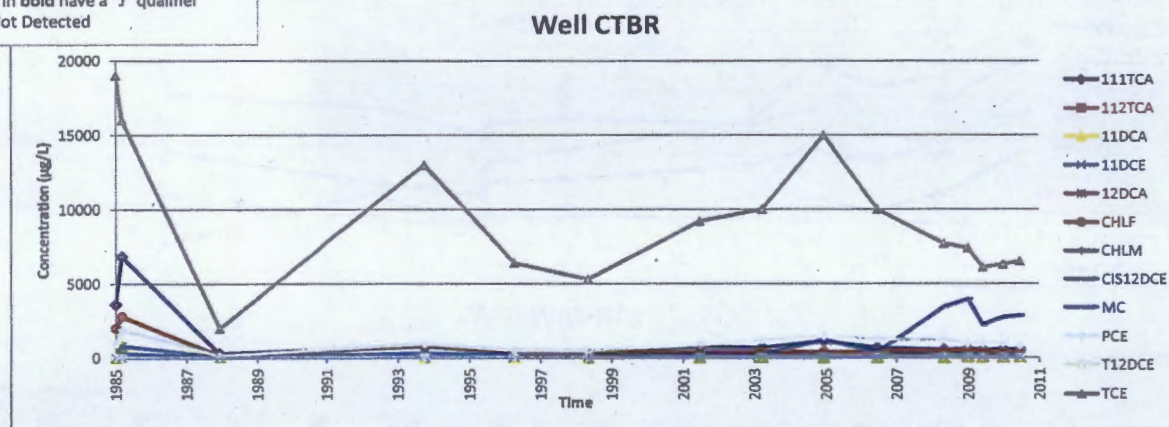


Figure 3

CENTRAL LAGOON AREA WELL DATA AND FIGURES

January 2012

Figure C1-51
Concentration (mass) vs. Time

003-6045

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
3/29/2005	390	ND	48	84	ND	170	ND	650	ND	700	ND	4500	ND	6542
12/1/2005	770	ND	53	140	ND	260	ND	1700	ND	870	ND	4800	56	8649
12/13/2006	410	ND	ND	93	ND	170	ND	1200	ND	600	ND	3300	ND	5773
10/10/2008	570	ND	ND	160	ND	140	ND	2700	ND	470	ND	3100	390	7530
6/22/2009	120	ND	14	36	ND	30	ND	230	57	190	ND	1100	16	1793
11/25/2009	87	ND	7.8	25	ND	17	ND	130	ND	170	ND	920	5.7	1362.5
6/16/2010	84	ND	9	20	ND	13	ND	180	ND	140	ND	850	8	1304
12/9/2010	86	0.3	8.3	22	ND	12	ND	140	ND	180	0.32	830	5.4	1284.32

Values in bold have a "J" qualifier
ND = Not Detected

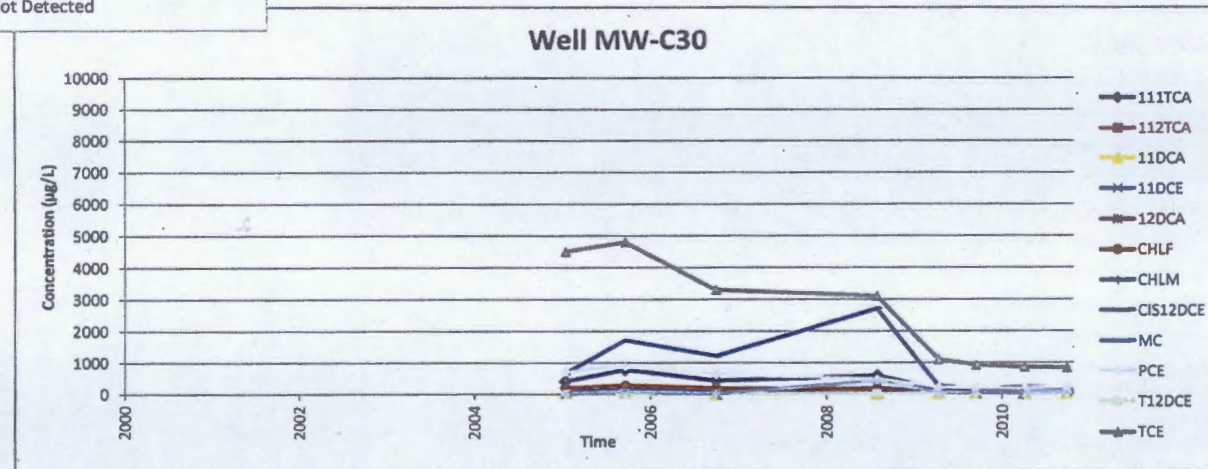


Figure 4

January 2012

Figure C1-52
Concentration (mass) vs. Time

003-6045

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
3/29/2005	11000	28	8800	270	230	360	ND	3600	4100	1400	ND	86000	51	115839
12/1/2005	4000	14	6300	510	150	180	ND	42000	3400	85	ND	1100	34	57773
3/24/2006	4000	ND	4200	330	200	160	ND	50000	2500	210	ND	550	51	62201
12/12/2006	820	ND	1300	66	ND	ND	ND	6500	ND	ND	ND	670	61	9417
10/20/2008	410	ND	340	86	ND	ND	ND	2500	ND	82	ND	210	330	3958
12/1/2009	70	ND	58	8	1.6	1	ND	350	1.6	31	0.61	53	69	643.81
12/13/2010	120	ND	270	15	ND	4.1	ND	760	ND	36	1.8	41	640	1887.9

Values in bold have a "J" qualifier
ND = Not Detected

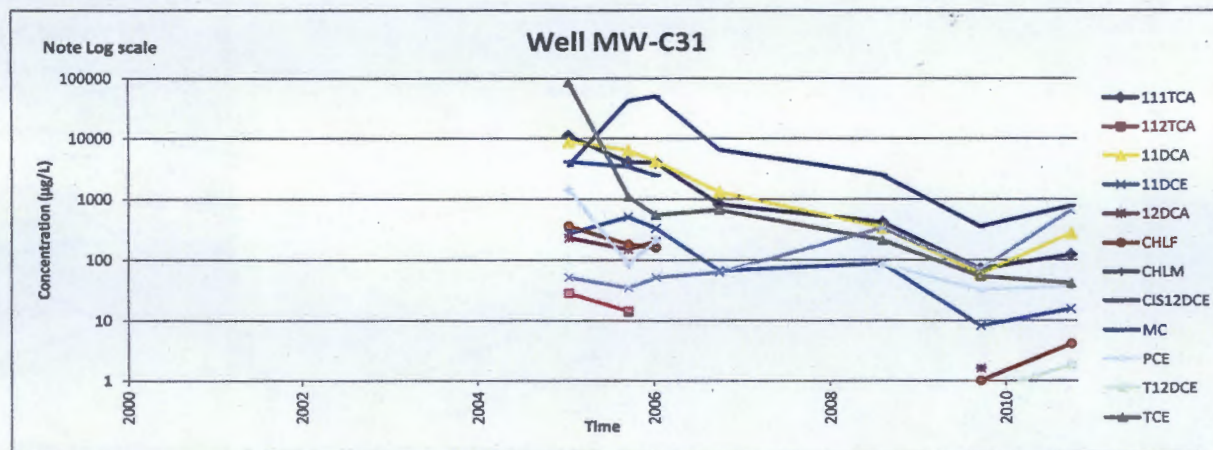


Figure 5

NORTH LAGOON AREA WELL DATA AND FIGURES



January 2012

Figure C1-53
Concentration (mass) vs. Time

003-6045

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
6/6/2005	87000	ND	1800	16000	ND	17000	ND	61000	44000	14000	ND	260000	ND	500800
12/1/2005	75000	190	2500	5700	160	16000	ND	51000	73000	9500	36	230000	82	463158
12/11/2006	140000	ND	5200	9600	ND	35000	ND	26000	140000	12000	ND	500000	ND	867800
10/20/2008	120000	210	3700	11000	210	26000	ND	17000	110000	12000	ND	450000	ND	750120
11/23/2009	87000	ND	2600	6100	ND	20000	ND	11000	79000	9600	ND	310000	ND	525300
12/22/2010	60000	ND	2200	3400	ND	17000	ND	9100	65000	6300	ND	250000	ND	413000

Values in bold have a "J" qualifier
ND = Not Detected

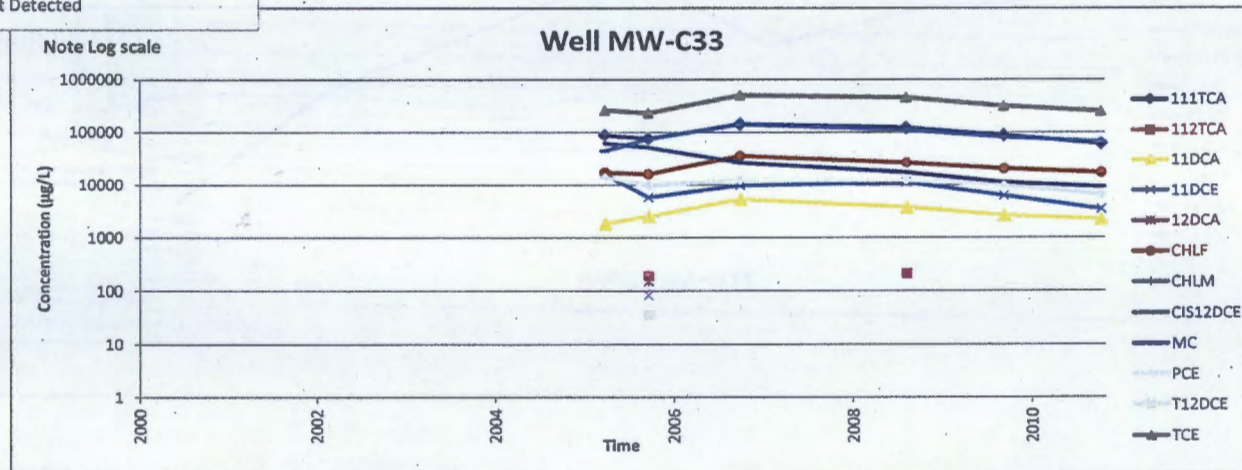


Figure 6

January 2012

Figure C1-27
Concentration (mass) vs. Time

003-6045

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
4/1/2000	460		170	ND		ND		4500		240		420	580	6370
12/17/2001	560	ND	230	ND	ND	ND	ND	2600	ND	ND	ND	50	780	4220
6/11/2004	47	ND	39	ND	ND	ND	ND	1100	ND	510	ND	520	27	2243
6/6/2005	32	ND	20	5.6	ND	ND	ND	810	ND	230	ND	250	9.7	1157.2
12/12/2006	78	ND	59	ND	ND	ND	ND	1700	ND	140	ND	240	68	2285
10/20/2008	350	ND	170	41	ND	ND	ND	1000	ND	24	ND	22	150	1757
11/23/2009	210	ND	62	ND	ND	ND	ND	890	ND	27	4.6	26	72	1291.5
12/22/2010	240	ND	140	5.7	ND	2.4	ND	550	8.7	18	3.4	130	68	1166.2

Values in bold have a "J" qualifier
ND = Not Detected

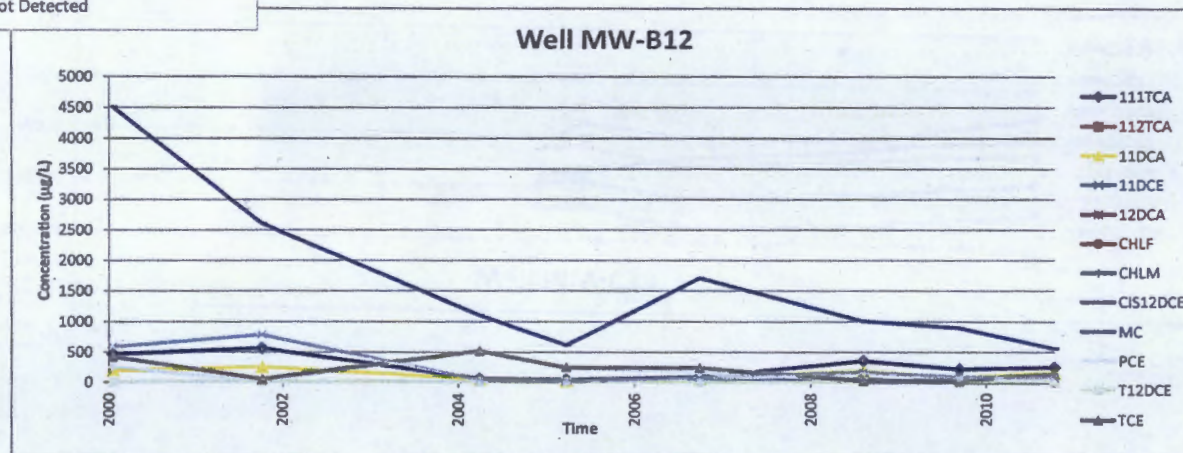


Figure 7

SEEP AND LATERAL EXTENT WELL DATA AND FIGURES

January 2012

Figure C1-41
Concentration (mass) vs. Time

003-6045

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
3/23/1988	270	2.8	17	32	ND	410	ND	72	850	46		1500	ND	3199.8
5/17/1988	88	0.91	92	36	1.8	58	ND	110	47	23		1200	ND	1638.71
6/16/1988	41	ND	79	41	3	160	ND	ND	ND	34		1200	ND	1558
3/9/1994	130	ND	ND	ND	ND	170		110	ND	89		1600	ND	2099
10/1/1996	110		15	24				120		85		1300	ND	1654
12/1/2001	ND	ND	81	19	ND	18	ND	89	ND	10	ND	630	12	859
6/9/2005	ND	ND	33	9.7	ND	11	ND	68	ND	8.6	ND	420	10	560.3
12/14/2006	ND	ND	11	3.3	ND	1.4	ND	110	ND	1.9	ND	62	4.6	194.2
10/30/2008	ND	ND	36	ND	ND	ND	ND	12	ND	2.8	ND	41	210	301.8
12/8/2009	ND	ND	4.3	0.88	ND	ND	ND	11	ND	1.5	0.4	6.6	72	98.68
12/20/2010	ND	ND	1.1	0.39	ND	ND	ND	7.1	ND	0.93	ND	10	8.5	28.02

Values in bold have a "J" qualifier
ND = Not Detected

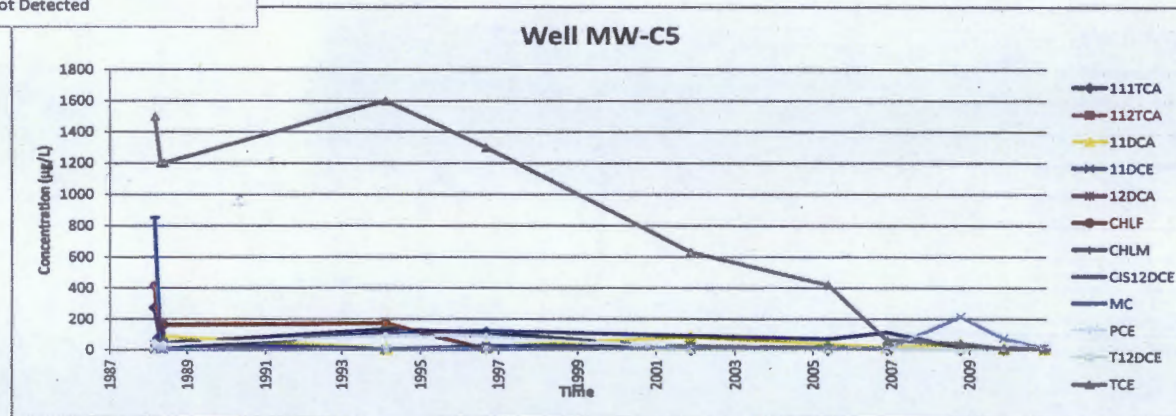


Figure 8

Figure C1-16
Concentration (mass) vs. Time

Date	111TCA	112TCA	11DCA	11DCE	12DCA	CHLF	CHLM	CIS12DCE	MC	PCE	T12DCE	TCE	VC	Total
5/1/1997	1100	ND	ND	ND	ND	1400	ND	1200	ND	ND	ND	10000	ND	13700
1/22/2002	1100	ND	150	860	ND	1100	ND	2700	ND	160	ND	11000	ND	17070
6/7/2005	580	ND	ND	370	ND	450	ND	1900	ND	190	ND	7900	ND	11390
12/14/2006	560	ND	94	240	ND	380	ND	2200	ND	130	ND	6700	ND	10304
10/29/2008	610	ND	96	250	ND	270	ND	2000	ND	140	ND	6700	ND	10096
12/3/2009	370	ND	72	200	ND	150	ND	1400	ND	84	ND	4700	ND	6976
12/21/2010	370	ND	67	200	ND	120	ND	1900	ND	100	5	4100	20	6882

Values in bold have a "J" qualifier
ND = Not Detected

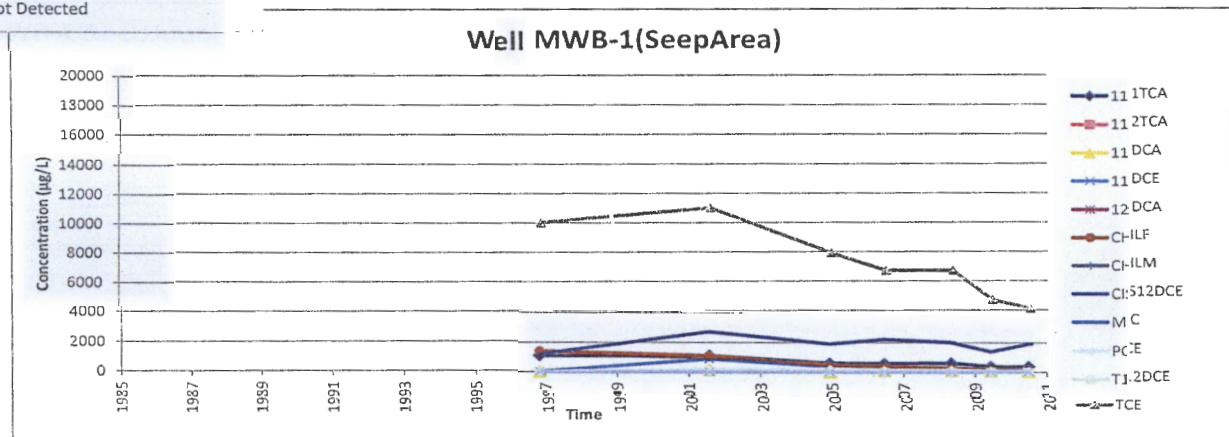


Figure 9